11.—Melanoplus yarrowi, *Thom.*

Caloptenus yarrowi, Thom. Rep. Geol. Geog. Expl. 100th Mer., V., 894, pl. XLV., f. 5 (1875).

Melanoplus yarrowi, Scudd. Rev. Mel., 369, pl. XXV., f. 2 (1897).

Two males, three females; Phœnix; October 2–10, 1900.

One of the females is very large, the measurements being as follows: Length of body, 35 mm.; tegmina, 26 mm.; posterior femora, 19 mm.

This species was described by Thomas from a single female collected in one of our Western States. The type was afterwards lost, but Scudder has re-identified the species from one male and one female from Grand Junction, Mesa County, Colorado. Thomas's specimen was probably from Arizona, though no definite locality was given at the time.

LECANIUM WEBSTERI, CKLL. AND KING, N. SP., WITH NOTES ON ALLIED FORMS.

BY GEO. B. KING, LAWRENCE, MASS.

In Canadian Entomologist, 1895, p. 255, Prof. Cockerell gave some notes and briefly described a species of *Lecanium*, found by Prof. Webster and others, as *L. ribis*, Fitch. Later, in April, 1899, in "The Industrialist," p. 234–5, he again describes it and gives measurements of the antennæ and legs, and states that Mr. Pergande has some doubt about the identification. In November, 1900, Prof. Cockerell sent me two lots of *Lecanium*, collected by Prof. W. D. Hunter at Ames, Iowa. These I determined as *L. ribis* (based on Prof. Cockerell's notes), and sent a statement of my determination to him. Very soon I received a reply, in which he cited Fitch's description of *L. ribis*, and stated that under the circumstances the species which he called *L. ribis* apparently must be something else, and suggested for it the name *Lecanium Websteri*, based on the species from Ohio, described in "The Industrialist," April, 1899, p. 235. On receipt of this letter, I wrote to Dr. Howard, requesting him, if possible, to let me have some of Fitch's *L. ribis*. His reply was as follows: "Mr. Pergande says that he is unable to decide which of our Eastern species is identical

with *L. ribis*, Fitch. Fitch's type has been destroyed, and there is nothing left but a fragment of the twig on which the species was found, showing only the original size, which must have been between 5 and 6 mm. in diameter. Since Fitch's short description appears to agree with *L. armeniacum*, Mr. Pergande thinks it to be that species, or a pale form of *L. cerasifex*, which is our most common Eastern species." At the same time, Dr. Howard kindly sent me some of Prof. Cockerell's *L. ribis*. These, together with specimens from Dr. Fletcher, P. J. Parrott, and those found by me in Massachusetts, were critically studied.

During the examination of these several lots of scales, it was questioned whether some, or perhaps all, might be very near if not identical with *L. Kansasense*, Hunter. I therefore wrote to Prof. Hunter for some of his species. Without delay, he kindly forwarded one of his type slide mounts, together with some scales *in situ*. These proved to be different from the species described by Prof. Cockerell as *L. ribis*, although in the antennæ and legs there seems to be no specific difference, but in the scale they differ very materially, being larger, very shiny, dark chestnut brown, distinctly pitted, and the texture of the scale much thicker. *L. Canadense*, Ckll., differs in the scale being much larger than *Websteri* or *Kansasense*, smoother, not so shiny, more convex, and not distinctly pitted. The antennæ and legs are larger and stouter, although the formula of the antennæ is nearly the same. *L. armeniacum*, Craw., is another perplexing species, which has practically seven-jointed antennæ, although, however, we find some individuals with only six joints, with the third very long and much resembling those already cited above. The scale of this species is quite large, of a pale brown colour, texture very thin, crowded closely together on the twigs, minutely pitted and not shiny. *Lecanium Websteri*, therefore, will be known by its very small size: 3 mm. long, 2 broad and about 2 high, of a yellowish brown colour; texture thin, not at all shiny, apparently inclined to be much shrivelled, nearly hemispherical in shape and not distinctly pitted, as in *L. Kansasense*, which is its most nearly related species. *L. Websteri* is normally a six-jointed species. In no instance did I find an individual with both of its antennæ to have seven joints. One would be six and the other seven, while it was not an uncommon occurrence to find individuals distinctly six-jointed. This will also apply to *L. Kansasense* and *L. Canadense*. The following measurements in micromillimeters will, it is hoped, assist in the recognition of the various species cited in this paper :

ANTENNAL SEGMENTS OF LECANIUM WEBSTERI.

	1	2	3	4	5	6	7	
Prof. Cockerell's original description of specimen from Ohio.	42	32	99	18	15	33		Formula 316245.
Those received from Dr. L. O. Howard.	36	36	80	16	20	32		Formula 3(612)54.
On mulberry at Kansas. (P. J. Parrott.)	40	40	100	20	20	40		Formula 3(612)45.
On *Celtis occidentalis*, Ames, Iowa. (W. D. Hunter.)	20 20	32 28	92 92	20 20	20 20	52 40		Formula 362(145). " "
On *Acer saccharinum nigrum*, Ames, Iowa. (W. D. Hunter.)	36 32 32	36 32 32	40 76 76	24 12 16	16 20 24	16 40 40	36	Formula 3(712)4(56). " 36(12)54. " "
On Ribes, at Nova Scotia. (Dr. J. Fletcher.)	28 20	40 40	88 44	20 44	24 16	44 20	44	Formula 362154. " (347)2(61)5.
On high-bush blueberry, Lawrence, Mass. (G. B. King.)	40	36	100	24	24	44		Formula 3612(45).
On white birch, Methuen, Mass. (G. B. King.)	40 48	40 11	108 64	24 52	24 80	60		Formula 36(12)(45). An abnormal 5-jointed form.
On *Spiræa*, Lawrence, Mass. (G. B. King.)	40	40	100	20	20	48		Formula 36(12)(45). This had also a 7-jointed individual, 3 divided in the centre.

Lecanium kansasense.

On *Cercis Canadensis*, Kansas. (Prof. Hunter type sp.)	32	28	76	20	16	36		Formula 361245.
On shad-bush, Methuen, Mass. (G. B. King.)	24	40	72	16	12	44		Formula 362145.
	28	40	76	20	16	40		" "
	20	28	92	20	30			An abnormal 5-jointed antennæ, and these have a 7-jointed antennæ.

Lecanium canadense.

On Ulmus Americana, Kansas. (S. J. Hunter.)	44	40	96	24	28	48		Formula 36(12)54.
On oak, Andover, Mass. (G. B. King.)	48	56	100	20	20	48		Formula 32(61)(54).
Prof. Cockerell's measurements of the 7-jointed form from Maine.	42	32–39	62–98	54	20–22	20–22	40–47	The formula of the 6-jointed form from Maine and Canada: 326154 3(126)54 36245.

Leg of L. Websteri.

	Coxa.	Femur and trochanter	Tibia.	Tarsus.	
Prof. Cockerell's spec. from Ohio.	99–115	145–149	99	54	
Those from Dr. Howard.	92	160	112	64	
	72	44	24	20	broad.
On *Celtis occidentalis*. (W. D. Hunter.)	80	128	84	60	
On *Acer saccharinum nigrum*. (W. D. Hunter.)	80	120	72	60	
On high-bush blueberry, Lawrence, Mass. (G. B. King.)	80	160	108	70	
	60	48	24	20	broad.